

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

## PCT

### WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/US2004/031124

International filing date (day/month/year)  
23.09.2004

Priority date (day/month/year)  
17.10.2003

International Patent Classification (IPC) or both national classification and IPC  
F02M35/022, F02M35/024, B01D45/16, B01D50/00

Applicant  
DONALDSON COMPANY, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**International application No.  
PCT/US2004/031124

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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2004/031124

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**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes: Claims	1-15
	No: Claims	
Inventive step (IS)	Yes: Claims	1-13
	No: Claims	14 15
Industrial applicability (IA)	Yes: Claims	1-15
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Reference is made to the following documents:

D1: GB237895 A

D2: GB752380 A

D3: US6264712 B1

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 14 and 15 does not involve an inventive step in the sense of Article 33(3) PCT.

D1 (page 1, line 10 - page 2, line 50) discloses a method for operating an air cleaner for separating dust and grit from the air that is taken into the carburettor of an internal combustion engine. The air cleaner comprises a plurality of flexible spring vanes (h). During the operation of the air cleaner, air is directed through the vanes at a first flow rate; the configuration of the vanes is adjusted while the air flow rate is increased to a second flow rate. The difference between the method of claim 14 and that of D1 is that an air cleaner is operated in D1, while a precleaner associated with an engine air cleaner is operated in claim 14. It is common practice in the art to use a precleaner and an engine air cleaner in combination (see for example D3 (column 1, line 15 - column 2, line 43)). Therefore, the subject-matter of claim 14 is not considered to involve an inventive step.

D2 (page 1, line 48 - page 2, line 31) discloses vanes which have a flexible portion, which may be made from a plastic, and a rigid portion. Moulding is one of the most common ways of manufacturing plastic products. Therefore, the subject-matter of claim 15 is not considered to involve an inventive step.

3. The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and shows ((page 1, line 10 - page 2, line 50):

an engine air cleaner comprising flexible spring loaded vanes (h), which are

deflectable over a range of positions. The subject-matter of claim 1 differs from D1 in that the vane(s) of claim 1 is /are configured to deflect from a first orientation to a second orientation in response to an increase in air flow rate through the precleaner. The vanes of D1 are deflected by means of a mechanical connection with the carburettor throttle in order to adjust the air flow rate through the cleaner.

The subject-matter of claim 1 is therefore new (Article 33(2) PCT).

The problem to be solved by the present invention may be regarded as the provision of a precleaner that is efficient at relatively low air flow rates, and exhibits limited flow restriction increases under higher air flow rate conditions.

The solution to this problem proposed in claim 1 of the present application is considered as involving an inventive step (Article 33(3) PCT) for the following reasons.

An air cleaner comprising flexible vanes which are deflected by the air flow is known from D2 (page 1, line 48 - page 2, line 31). However, the vanes do not act to separate particulate material from the air. Instead, they act to prevent the clogging of passages leading to dust collecting equipment. Therefore, the skilled person would not consider the device of D3 as suitable for separating particulate material from air entering an engine air cleaner. Therefore, there is no indication in the prior art that would prompt the skilled person to amend the disclosure of D1 by using vanes that are deflected from one orientation to another in response to an increased air flow rate.

Substantially the same reasoning applies to independent claim 12.

Claims 2-11 and 13 are dependent on claim 1 and as such also meet the requirements of the PCT with respect to novelty and inventive step.